

WHAT IS CLAIMED IS:

1. An image contour extraction method comprising the steps of:

inputting image data and shape data which is a
5 binary image representing a provisional region of an
object in the image data;

reducing the image data and the shape data;

performing coarse contour position correction on the
basis of the reduced image data and shape data to
10 coarsely bring a contour of the shape data close to a
contour of the image data; and

performing main contour position correction to match
the contour of the shape data to the contour of the image
data on the basis of the image data and the coarsely
15 adjusted shape data obtained by the coarse contour
position correction,

wherein the coarse contour position correction
includes arranging a plurality of search reference
blocks, each having a first size, on the contour of
20 reduced shape data, searching, for each of the search
reference blocks, the reduced image data for a similar
block having a texture similar to that of the search
reference block and having a second size larger than
the first size, and replacing all the search reference
25 blocks with correction shape data obtained by
extracting data of the similar blocks from the reduced
shape data and reducing the data to the first size, and

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first image data; and

matching a contour of the shape data to a contour of the extraction object by using the first image data and the provisionally generated shape data.

5 5. A method according to claim 4, wherein the
shape data generating step comprises determining a
plurality of candidate regions in advance and, when the
candidate regions are selectively set in the first
image data, setting a candidate region, as a
0 provisional region of the extraction object, which
exhibits a largest difference between a statistical
characteristic of inside pixel values and that of
outside pixel values.

6. A method according to claim 4, wherein the
15 shape data generating step comprises comparing current
input image data corresponding to the first image data
with background image data corresponding to the second
image which is acquired in advance without capturing
the extraction object, and setting a region in which
20 the current input image data differs in value from the
background image data as a provisional region of the
extraction object.

7. A method according to claim 4, wherein the first step comprises holding image data of a frame from which a region of the extraction object has already been obtained and shape data as reference image data and reference shape data, respectively, performing

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motion detection with respect to the current input image data corresponding to the first image data by referring to the reference image data, and performing motion compensation for the reference shape data on the basis of the motion detection result, thereby generating the provisional shape data.

8. An object extraction method comprising the steps of:

inputting image data and shape data as an image representing provisional regions of extraction objects in the image data;

arranging a plurality of search reference blocks, each having a first size, on a contour portion of the shape data;

searching the same image for a similar block, for each of the search reference blocks, which has a texture similar to that of the search reference block and a block size larger than that of the search reference block; and

replacing shape data in each of the search reference blocks with correction shape data which is obtained from a corresponding one of the similar blocks and has undergone size correction by reduction processing,

wherein the shape data has different pixel values in an object region and a background region which differ from each other, and

the reduction processing in the replacing step uses a pixel value of one of pixels around a sampling point of the shape data as a sampling value.

9. An image contour extraction method comprising
5 the steps of:

displaying an original image on a display screen on the basis of original image data;

manually setting a rough contour of an object displayed on the display and generating shape data
10 corresponding to the rough contour; and

performing contour position correction by a self-affine mapping technique to match an actual contour of the object to the rough contour,

wherein the contour position correction includes
15 performing reduction processing for the original image data and shape data to obtain a reduced original image and reduced rough contour obtained by reducing the original image and rough contour, and performing coarse contour position correction by the self-affine mapping
20 technique using the reduced original image data and shape data, thereby coarsely bringing the rough contour close to the contour of the original image, and performing main contour position correction by the self-affine mapping technique using the coarsely
25 adjusted shape data and original image data obtained by the coarse contour position correction, and matching the rough contour to the contour of the original image.

10. A method according to claim 9, wherein the coarse contour position correction comprises the steps of arranging a plurality of search reference blocks, each having a first size, on the reduced rough contour, searching, for each of the search reference blocks, the reduced image data corresponding to the search reference block for a similar block having a texture similar to that of the reduced original image and a second size larger than the first size of the search reference block, and replacing all the search reference blocks with correction shape data obtained by extracting data of the similar blocks from the shape data and reducing the data to the first size.

11. A method according to claim 10, wherein the main contour position correction comprises the steps of arranging a plurality of search reference blocks, each having a third size, on the rough contour, searching, for each of the search reference blocks, the original image data corresponding to the search reference block for a similar block having a texture similar to that of the original image and a fourth size larger than the third size of the search reference block, and replacing all the search reference blocks with correction shape data obtained by extracting data of the similar blocks from the rough contour and reducing the data to the third size.

12. A method according to claim 9, wherein the

coarse contour position correction comprises the step of obtaining a 1/2 reduced original image by reducing the original image and rough contour to 1/2.

13. A method according to claim 9, wherein the
5 coarse contour position correction is repeated a plurality of number of times, and a size of the search reference block is decreased as the coarse contour position correction is repeated.

14. A method according to claim 9, wherein the
10 coarse contour position correction comprises limiting a similar block search range to a direction perpendicular to a direction of a contour of shape data in a search reference block.

15. A method according to claim 9, wherein the
15 coarse contour position correction comprises reducing a block size of a search reference block to 1/2 vertically and horizontally, checking whether the reduced block size of the search reference block is smaller than a reference value, and advancing the main
20 contour position correction if the block size is smaller than the reference value and returning to the reduction step if the block size is not smaller than the reference value.

16. A transmission system comprising a server and
25 client which mutually transmit/receive transmission/reception data,
said client including:

an object extraction section which obtain
extracted image data by extracting an object from image
data obtained by capturing an extraction object,

5 a client transmission section which transmits the
extracted image data as down stream
transmission/reception data to said server without any
change or upon compression,

10 a client reception section which receives upstream
transmission/reception data sent from said server and
handles the transmission/reception data as image data
if the data is not compressed, and reproduces the image
data if the data is compressed, and

a display which displays the image data, and
said server including:

15 a server reception section which receives the
downstream transmission/reception data, handles the
transmission/reception data as extracted image data if
the data is not compressed, and reproduces the
extracted image data if the data is compressed,

20 a composite section which synthesizes the
extracted image data with one composite image data, and

a server transmission section which transmits the
composite image data as the upstream
transmission/reception data without any change or upon
25 compression.

17. A transmission system comprising a plurality
of communication terminals for mutually

